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MONTANA STATEWIDE GRIZZLY BEAR MORTALITIES 1984-1985

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Research Progress Report

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Montana Department of Fish, Wildlife, & Parks

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ABSTRACT

Montana grizzly bear hunting seasons are subject to federal rulings under the Endangered Species Act of 1973. Since 1975, a federal quota of 25 grizzlies has existed for the Northern Montana grizzly populations and no hunting is permitted in the southern Montana grizzly population. A total of 598 and 523 grizzly bear hunting licenses were issued in 1983 and 1984, respectively. Hunters killed 8 grizzlies in 1983 and 12 in 1984, and in each respective year there were 7 and 8 non-hunting mortalities. For each year the total mortality was 10 and 5 below the 25 quota. The 60 known man-caused grizzly mortalities in the Interagency Yellowstone study area for 1975-1984 shows only 12% (7 individuals) were incidents classified as poaching. Similar classifications for 83 known non-hunting man-caused grizzly mortalities in the northwest border populations had 19% (16 individuals) designated as poaching. A high incidence of control actions during 1983 and 1984 in the Yellowstone area continued; there were 43 relocations of 34 individuals during both years.

OBJECTIVE

To determine the categories, extent, and composition of man-caused mortality of grizzly bears in Montana.

PROCEDURES

Various data are obtained from or by hunting license sales, hunting and tagging regulations, hunting and nonhunting mortalities, control actions, verified field reports and mail surveys (Greer 1972, 1974). Age designations to the full year was by cementum layers and status of skull sutures. Fractions of a year were added from an assumed birth data of February 1, plus or minus a week to 10 days, to the date of death.

RESULTS AND DISCUSSION

The Endangered Species Act of 1973 and a subsequent rule in the 28 June 1975 Federal Register of the U.S. Fish and Wildlife Service classified the grizzly as "threatened" in the lower 48 states, effective 1 September 1975. Those regulations imposed that: (1) man-caused mortalities in the northwest Montana grizzly populations were limited to an annual (Jan.-Dec.) quota of 25 grizzlies, including nonhunting, and (2) the southcentral Montana grizzly population adjacent to Yellowstone National Park was closed to the hunting of grizzly bears.

Northwest Montana grizzly populations are within administrative areas approximately 10,000 mi^2, including those in Glacier National Park and the Flathead and Blackfeet Indian Reservations. Known grizzly mortalities here have ranged from 14 to 24 in each of the 10 seasons. These populations have been studied by the Border Grizzly Bear Project since 1974 (Jonkel 1976, 1980; Aune and Stivers 1981, 1982, 1983, 1984).

Southcentral Montana grizzly populations occur in the Gallatin National Forest adjacent to Yellowstone National Park. This general area, which also includes northwestern Wyoming and east-central Idaho, is called the Yellowstone Ecosystem. During the absence of hunting since 1974, there have been 21 known nonhunting mortalities; while other mortalities may be suspected, none are substantiated. This population has been investigated since 1973 by the Interagency Grizzly Bear Study Team (Knight et al 1975, 1982).

A prominent phase of grizzly bear management is the cooperation with other agencies with capture and relocating nuisance bears. Interagency assistance is required for each circumstance. All of these known incidents during 1983 and 1984 are included in this report.

Mortalities

The known man-related hunting and non-hunting grizzly mortalities are those reported to a department office and a carcass or portion thereof is available to document each bear. A variety of terms have been associated with grizzly bear mortalities and some have conflicting interpretations. The following categories are used in recording all grizzly mortalities:

Man Caused Non-Hunting Mortality

A - Illegal

1. Menacing (stated as self defense by person)
2. Mistaken identity (looked like black bear)
3. Remove carcass (poaching)
4. Take parts (poaching)
5. Deliberate and let lay (vandal killing, poison, snare, unknown)
6. Hunting casualty (wounded and later found)

B - Trap casualty (drugs, mechanical, probable or possible after effects)
C - Control (intentional overdose, protecting self or property)
D - Live removal from population
E - Roadkill
F - Train collision
G - Marauder (livestock, raid upon, plunder, force)
H - Nuisance (garbage, annoyance, harm, injury)

Natural Mortality

A - Accident (avalanche chute, fall off cliff, etc.)
B - Starvation (den)
C - Old age, disease, parasite
D - Interspecific (fighting casualty)
E - Undetermined

Some man-related grizzly mortalities are reported immediately, while others are delayed. Information obtained from visitations by various public and agency personnel in and adjacent to areas utilized by grizzly bears is shared, including knowledge of incidents jeopardizing the status and welfare of grizzlies. Leads or duplicated rumors of mortalities are investigated to obtain evidence that results as a suspected, circumstantial, probable, or misunderstood incident; these are usually unsubstantiated with tangible evidence and are not documented in the known annual mortalities.

A few grizzlies have been killed beyond the boundary described in the Federal Register classifying the grizzly in 1975; these instances are not included in the annual quota. Also, a few enforcement investigations established after a reporting period revealed grizzly specimens verified they were taken in a prior year. These addenda are distinctly noted beside the reported totals for any given year.

Nineteen known grizzly bear mortalities occurred in Montana during 1983, with 15 from the northwest and 4 from the south-central populations. In 1984, 20 were taken in the northwest and 1 from the southcentral populations (Table 1). In the northwest population during 1983 hunting accounted for 8 bears from 4 of 18 hunting districts during the season and 7 nonhunting mortalities occurred in the same population (Tables 2, 3 and 4). Since the annual quota of 25 man-related grizzly mortalities was established for the northwest population, and addenda of one each for 1979 and 1981, the 1975-82 annual mortalities averaged 19.5 (range 14-24) bears that include 10.8 for hunting and 8.7 by nonhunting.

In 1984, 21 mortalities are known, with 20 from the northwest and 1 from the southcentral populations. Hunters accounted for 12 grizzlies from 5 of the 18 hunting districts (Tables 4, 5 and 6) during the season and 8 additional mortalities were from nonhunting causes.

Nonhunting

Several factors suggest that most, if not all, man-caused, nonhunting mortalities are eventually reported to the department. The National Audubon Society offers rewards of up to $15,000 for information leading to arrest and convictions of persons involved with illegal killing of grizzly bears. There have been no solid reports of, nor have investigations revealed, illegal grizzly trafficking in Montana since the offer was made 4 years ago. Because the offer has received wide publicity and the reward is large, yet claimants have been lacking, it may be that this publicity delayed, or eliminated the illegal killing of grizzly bears.

Federal undercover investigations with intimidation, coercion and disguised identity did not reveal any involvement or accusations

Table 1. Known man-related grizzly mortalities from northwest and southcentral Montana populations during 1974-1984.

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Northwest											
Hunting	18	13	11	5	7	11	11	11	17	8	12
Nonhunting	19	9	12	9	7	7/1[a]	12/1[b]	5/1[a]	7/1[b]	7	8
Total	37	22	23	14	14	18/1	23/1	16/1	24/1	15	20
		annual quota of 25									
Southcentral											
Hunting	CLOSED TO HUNTING										
Nonhunting	1	0	1	2	2	1	2	4	3	4	1
Total	1	0	1	2	2	1	2	4	3	4	1
STATE TOTAL	38	22	24	16	16	19/1[a]	25/1[b]	20/1[a]	27/1[b]	19	21

a - Enforcement evidence uncovered after reporting period (see text)
b - Mortality outside of quota boundaries

Table 2. Data on 8 grizzly bears taken by hunters during the 1983 season in northwest Montana.

No.	HD[a]	Sex	Age[b]	Date	Skull Size[c]	Location	
1	130	F	3	Oct 25	18-5/16	N. Lost Cr.	Sec. 25, T25N, R17W
2	130	M	9	Oct 26	22-5/16	N. Lost Cr.	Sec. 31, T25N, R17W
3	141	M	5	Oct 27	Broken	Scarface Mtn.	Sec. 28, T28N, R15W
4	141	M	4	Nov 1	Broken	Elk Cr.	Sec. 21, T28N, R16W
5	141	M	-[d]	Nov 11	-----	Spruce Cr.	Sec. 17, T28N, R15W
6	150	M[e](20)	3	Sep 21	17-0/16	Gorge Cr.	Sec. 13, T23N, R16W
7	150	M[e](550)	3	Oct 3	21-9/16	Salmon Park	Sec. 23, T22N, R14W
8	151	M	4	Sep 29	18-4/16	S Fk Trail Cr	Sec. 23, T25N, R11W

a - Hunting district on 1983 state general big game hunting map
b - Cementum age, plus fraction of current year starting Feb. 1
c - Total length and width in inches (Boone & Crockett score)
d - Skull not available
e - Marked bear and identity - see text for details

Table 3 - Known nonhunting man-caused grizzly mortalities in Montana populations during 1983.

(Northwest Montana grizzly population with annual quota of 25)

Lab No.	HD[a]	Sex	Age[b]	Date	Marked[c]	Skull Size[d]	Mortality[e] (Category)	Location
1 - 179057	140	F	14	May 7±	No	19-13/16	Illegal (2)	Deep Creek Sec. 28, T29N, R17W
2 - 179053	140	F	1	May 12	No	14-1/16	Illegal (2)	So. Fork Flathead Sec. 19, T27N, R16W
3 - 179054	140	F	18	May 12	No	20-0/16	Illegal (1)	So. Fwk. Flathead Sec. 19, T27N, R16W
4 - 179056	130	M	3	May 18	No	17-15/16	Illegal (2)	Lower Swan Sec. 19, T27N, R18W
5 - 179055	110	M	1	May 22	No	BKN	Illegal (2)	Hay Creek Sec. 30, T35N, R21W
6 - 179068	GNP	M	C	Aug 15±	No	12-11/16	Road Kill E	Going Sun Hwy. Glacier Natl. Park
7 - 179091	151	M	12	Sep 24	No	23-2/16	Illegal (1)	Schaffer R.S. Sec. 17, T26N, R12W

(Southcentral Montana grizzly population)

1 - 179058	313	M	1	Jun 22	Yes (#95)[f]	15-3/16	Trap-B	Gardiner Dump Sec. 16, T9S, R8E
2 - -----	313	F	12	May 22	Yes (#10)	-----	Live D	Gardiner Dump Sec. 16, T9S, R8E
3 - 179059	435	M	12	Jun 26	Yes (#15)	23-10/16	Control C	Rainbow Point Sec. 24, T12S, R44E
4 - -----	---	F	6	Aug 21	Yes (#60)	-----	Live D	West Yellowstone Sec. 34, T13S, R45E

a - Hunting districts designated on Montana general big game hunting map for 1983
b - Cementum annulations plus fraction of current year starting February 1
c - With one or more: ear tag, tattoo, radio collar
d - Maximum length plus maximum width in inches (Boone and Crockett score)
e - Category: Illegal (A), menacing (A-1), mistaken identity (A-2), control (C), live (D), road kill(E) (Greer 1983)
f - Marked grizzly in Interagency grizzly bear studies

Table 4. Hunter harvest of grizzly bears in Montana hunting districts of northwest Montana, 1975-1984.

Hunting District	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
101[a]	-	1	1	0	1	0	0	1	0	0
110	0	1	1	2	1	0	2	2	0	0
130	0	1	0	0	0	1	0	4	2	0
140	3	2	1	0	2	3	2	2	0	0
141	-	-	-	1	0	1	0	2	3	0
150[b]	4	4	0	3	5	4	4	2	2	4
151[b]	-	-	-	-	-	0	1	2	1	5
280[b]	3	2	1	0	1	2	0	0	0	1
415	0	0	0	1	0	0	0	0	0	0
422	0	0	0	0	0	0	0	0	0	1
424	0	0	0	0	1	0	0	0	0	0
427	0	0	0	0	0	0	1	0	0	0
428	1	0	0	0	0	0	0	0	0	0
441	1	0	0	0	0	0	1	1	0	0
442	1	0	1	0	0	0	0	1	0	0
450	0	0	0	0	0	0	0	0	0	1
Total Grizzlies	13	11	5	7	11	11	11	17	8	12

a - A portion of the district
b - Early hunting season starting 15 September and running concurrently with the regular hunting season
- Not established

Table 5. Data on 12 grizzly bears taken by hunters during the 1984 season in northwest Montana.

No.	Lab	HD[a]	Sex	Age[b]	Date	Skull Size[c]	Location
1	179246	150	M	4	Sep 24	18-9/16	Sec. 23, T23N, R15W
2	179220	150	M	2	Sep 30	18-7/16	Sec. 25, T19N, R11W
3	179242	150	M	8	Oct 8	20-3/16	Sec. 33, T21N, R13W
4	179222	150	F	2	Oct 13	16-11/16	Sec. 19, T19N, R10W
5	179245	151	F	12	Sep 15	19-8/16	Sec. 11, T26N, R13W
6	179243	151	M	2	Sep 25	15-14/16	Sec. 8, T27N, R12W
7	179244	151	M	2	Oct 2	17-6/16	Sec. 13, T27N, R12W
8	179247	151	M	5	Oct 4	21-6/16	Sec. 29, T26N, R12W
9	179232	151	F	5	Oct 15	19-6/16	Sec. 35, T25N, R11W
10	179221	280	F	8	Oct 8	20-6/16	Sec. 13, T17N, R9W
11	179228	422	M[d](282)	9	Oct 24	23-1/16	Sec. 24, T18N, R9W
12	179233	450	F[d](518)	4	Oct 21	18-13/16	Sec. 31, T28N, R6W

a - Hunting district on the 1984 Bear Hunting Regulations map
b - Cementum age, plus fraction of current year starting Feb. 1
c - Total length and width in inches (Boone & Crockett score)
d - Marked bear and identity - see text for details

Table 6 - Known nonhunting man-caused grizzly mortalities in Montana populations during 1984.

(Northwest Montana grizzly population with annual quota of 25)

Lab No.	HD[a]	Sex	Age[b]	Date	Marked[c]	Skull Size[d]	Mortality[e] & Category	Location
1 - 179199	130	M	3	Jun 20	No	19-4/16	Illegal A-1	Sec. 32, T23N, R17W
2 - 179197	GNP	M	3	Jul 30	No	17-6/16	Control-C	Many Glacier, GNP
3 - 179210	FIR	M	7	Sep 9	Yes (#028)	22-9/16	Marauder-G	Sec. 4, T19N, R19W
4 - 179270	BIR	M	4	Sep 15	Yes (#544)	20-12/16	Illegal A-5	Sec. 28, T30N, R11W
5 - 179216	406	F	9	Sep 22	Yes (#273)	21-4/16	Illegal A-5	Sec. 26, T25N, R6W
6 - 179238	141	M	1	Oct 1	No	15-11/16	Train-F	Sec. 1, T31N, R18W
7 - 179239	150	F	(3 est)	Oct 2	No	-----	Illegal A-1	Sec. 29, T23N, R15W
8 - 179237	141	M	6	Oct 21	No	BKN	Illegal A-6	Sec. 18, T31N, R17W

(Southcentral Montana grizzly population)

1 - 179211	361	M	1	Sep 14	No	16-10/16	Trap-B	Sec. 27, T13S, R45E

a - Hunting districts designated on Bear Hunting Regulations Map for 1984
b - Cementum annulations plus fraction of current year starting February 1
c - With one or more: ear tag, tattoo, radio collar
d - Maximum length plus maximum width in inches
e - Categories: Illegal (A), menacing (A-1), deliberate (A-5), hunting (A-6), trap casualty (B), control (C), Train (F), marauder (G) (Greer 1983)

about grizzly bears as purported in recent newspaper disclosures of profiteering with wildlife species and specimens.

Various agencies, writers, and the public have widely used the term "poaching" as a primary reason for grizzly populations not appearing to be in densities as in former years. While man-caused mortality occurs in grizzly populations, the total of all man-caused mortality is not by poaching; Webster's Dictionary defines poaching as: to take, kill or destroy game illegally. Of the 6 grizzly mortality groups listed under illegal, only A3 and A4 were considered as poaching. Classification and summary of the 74 and 52 known man-caused grizzly mortalities in respective, northwest and Interagency Yellowstone populations, 1975-1983 (Table 7, 8 and Fig. 1), revealed that 26-27% of the mortalities resulted from poaching.

Northwest Population

Nonhunting mortalities from the northwest populations in 1983 included 4 males (ages C, 1, 3, 12 years), and 3 females (ages 1, 14, 18 years). This male:female ratio compares to 5:1 in 1982, 4:1 in 1981 and 7:5 in 1980. The current mortalities were from 4 hunting districts and Glacier National Park. Mortality categories included 4 considered by persons to be a black bear, 2 were stated as self defense, and 1 was killed by a vehicle in Glacier National Park. None of these bears had been previously captured and tagged.

During 1984 in the same population the 8 nonhunting grizzly mortalities included 6 males and 2 females (Table 6).

Southcentral Population

In the southcentral grizzly population four grizzlies (each a marked study bear) were removed from the Gallatin National Forest, Montana, portion of the Interagency Grizzly Bear study area in 1983; they included: 2 males (1 and 12 years) and 2 females (6 and 12 years) (Table 3). Previous mortalities were: a male (14 years) and 2 females (2 and 15 years) in 1982; 2 males (3 and 5 years) and 2 females (8 and 22 years) in 1981; and a male (4 years) and a female (8 years) in 1980.

In 1984 a yearling male was removed from the population as a trapping casualty (Table 6).

1 - Yearling male (#95) was initially snare captured as a cub, along with the snared sibling male (#94), sibling female (#93), and the culvert trapped adult female (#10) in the vicinity of Cooke City dump on 28 August 1982. The group was moved by vehicle to Mammoth for marking and helicopter relocation to Fan Creek in YNP an air distance of 55 miles from capture site (Table 3 and 9).

The group appeared at the Gardiner dump on 22 May 1983, each was again snared and immobilized, and placed in a culvert

Table 7. Known man-caused grizzly mortalities (excluding hunting) from northwest grizzly populations since 1975.

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	TOTAL
A-Illegal											
1-Menacing			1			1		1	2	2	7
2-Identity problem		3		2	1	1 (1)[b]	1	1	4		13 (1)
3-Remove carcass*						1	(1)[a]	1 (1)[b]			2 (2)
4-Take parts*	5	1	2	2	1			1			12
5-Deliberate					1			1		2	4
6-Hunt casualty		1								1	2
B-Trap Casualty					1						1
C-Control		1			1					1	3
D-Live	1			1	1	3					6
E-Roadkill											--
F-Train	1	2								1	4
G-Marauder			2			2				1	5
H-Nuisance							1				1
Glacier N.P.		3	3	1		1	1		1		10
Blackfeet I.R.	2		1			1		2			6
Flathead I.R.		1		1	1 (1)[a]	2	2				7 (1)
TOTAL	9	12	9	7	7 (1)	12 (1)	5 (1)	7 (1)	7	8	83 (4)

*Classified as "profiteering"
a - Reported in subsequent year.
b - Not in quota area.

Table 8. Known man-caused grizzly mortalities from the Interagency Yellowstone Grizzly Bear study area with hunting prohibited in Montana, Wyoming, and Idaho since 1975.

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	TOTAL
A-Illegal											
1-Menacing						1	2	1		1	4
2-Identity problem		1					1	1			3
3-Remove carcass*							1	2			3
4-Take parts*						1	1	2			4
5-Deliberate		1	3	1			1	1		1	8
B-Trap casualty		1			1	1		2	2	4	10
C-Control		1	4	2	1	1	1	2	2	1	15
D-Live			2	1		1		3	2	2	7
E-Roadkill											4
F-Train											
G-Marauder											
H-Nuisance			1		1						1
											1
TOTAL	0	4	10	4	3	5	6	14	6	9	60
Montana	0	1	2	2	1	2	4	3	4	1	20
Wyoming	0	2	3	0	1	1	2	8	0	2	19
Idaho	0	0	2	0	0	0	0	0	0	2	4
Yellowstone NP	0	1	3	2	1	2	0	3	2	4	17
TOTAL	0	4	10	4	3	5	6	14	6[a]	9[b]	60

*classified as "profiteering"
a - See Table 13.
b - See Table 14.

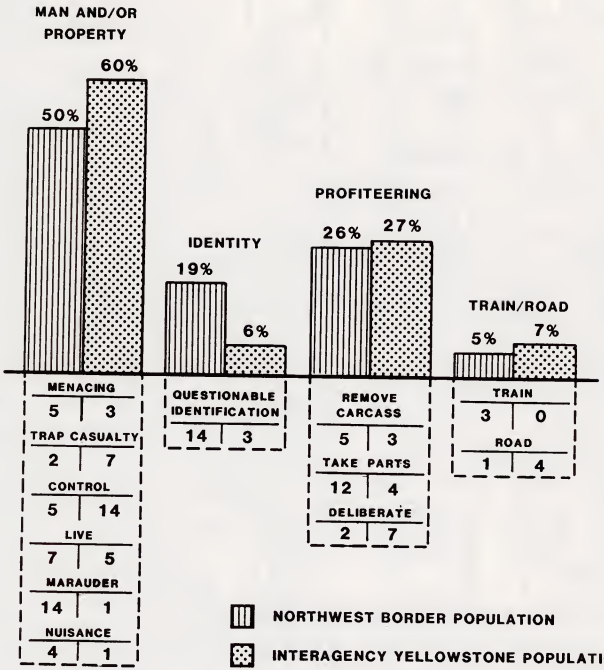


Figure 1. Categories and classification (Greer 1983) of the 74 and 52 known man-caused nonhunting grizzly bear mortalities from respective northwest (including GNP, FIR, BIR) and southcentral populations, 1975-1983.

Table 9. Sex and age (in years) of nonhunting (NH) and hunting (H) known mortalities of marked and unmarked grizzlies in the northwest Montana populations, 1975-1984.

	1975				1976				1977				1978				1979			
	NH (9)		H (13)		NH (12)		H (11)		NH (9)		H (5)		NH (7)		H (7)		NH (7)		H (11)	
	M[a]	F[b]	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Marked		6			2				6	2			5	3 10			3 7		8	
Unmarked	1/2 1 2	1/2 3 9 11 13	3 3 4 7 8 22	2 3 3 4 5 10	1 2 3 3 3 7 18	1/2 3 5 6 15	2 4 4 6 8	1 2 2 9 10 11	4 4 5 5 (1 unk sex & age)	3 8	3 6	2 4 15		2 3 5 18	3 4 4 7 21	21	4 12 16 22	6 3[b]	1 4 4 5 7 8 11	4 20 23

	1980				1981				1982				1983				1984			
	NH (12)		H (11)		NH (5)		H (11)		NH (7)		H (17)		NH (7)		H (8)		NH (8)		H (12)	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Marked	4 5 5	4 5 10 16	6 17					7	2[c] 15		2 3 8	4			3 3		4 7	9	9	4
Unmarked	1 5 7 9 7[c]	19	1 9 20 21	3 9 10 13 14	3 4 12 19 6[b]	4	1 2 3 4 4 5 5 7	3 15	1/2 3 4 15 (1 unk sex & age)	4	2 2 5 5 9	1 2 2 4 10 12 15 25	1/2 1 3 12	1 14 18	unk 4 4 5 9	3	1 3 3 6	3	2 2 2 4 5 8	2 5 8 12

(33)

(160)

(193)

a M = male; F = female
b Reported during following year.
c Outside boundary for quota.

trap for transport to Mammoth. The 2 male yearlings (#94, #95) were relocated by helicopter to Pelican Valley in YNP, a distance of 37 air miles; the female yearling was released in Spruce Creek YNP, a distance of 35 air miles. The adult female was transported by vehicle to Missoula, then subsequently accepted by British Columbia and released about 25 miles north of the U.S./Canadian boundary in the Flathead river drainage.

When initially culvert captured near Cooke City on 8 September 1975, the female #10 was aged (by cementum layers) as 4 years. She was snared at the Cooke City dump on 17 September 1975, and culvert trapped there on 3 and 12 August 1976. During the following 3 years she was presumed to be dead, because there were no radio contact, sightings or recaptures. However, she was culvert trapped in the vicinity of Cooke City dump on 18 July 1980 and again 2 August 1981.

On 28 August 1982 this female (11 years) was snared, as were each of her 3 new cubs at Cooke City. This family group was again snared 22 May 1983; the young were then yearlings. Number 10 was relocated to B.C. (see above) and the 2 male yearlings (#94, #95), after capture and relocation together on 22 May 1983, returned to the Gardiner dump and were again snared on 18 June 1983. Snaring of one yearling (#95) resulted in a dislocated leg from entwinement in a fence; after a few days of observation in the holding culvert, the severe injury did not heel and the bear was dispatched. His sibling (#94) was relocated at Two Ocean Plateau, YNP; he was later observed around Madison Campground (YNP), trapped 6 July 1983 and transferred 8 July to Missoula for control research with adverse odors. Following this research, he was euthanized on 27 July.

The female (#93) of the original litter was snared with the others at the Gardiner dump on 23 May 1983 and relocated alone in Spruce Creek, YNP, about 35 air miles directly south of the capture site.

2 - A young female (#60) was initially culvert trapped in the vicinity of Cooke City dump on 27 August 1980, marked and released at the same site; she had a cementum age of 3 years. She was captured again in the same trap on 31 August and released.

The following year she returned to a culvert in the same area on 20 July 1981 and again released at the site. On 15 August she was captured in a snare in the vicinity of Cooke City dump, transferred by vehicle to Mammoth (YNP) to be relocated by helicopter on Cook Peaks, YNP, about 38 air miles from the capture site.

As a 5-year old female, she appeared at Silvergate, Montana, was culvert trapped 26 August 1982, transferred to Mammoth

and relocated by helicopter to Fan Creek (YNP), a distance of 55 air miles from capture site.

On 21 August 1983, #60 was snared in West Yellowstone and her 2 cubs-of-the-year were free shot with a capture gun. She was transferred to Missoula for research studies with aversive conditioning agents. After these studies and a public comment and hearing in West Yellowstone, #60 was transferred and received at a Kansas zoo on 15 October 1983.

The cubs of #60 were moved by vehicle to Mammoth; during a helicopter flight, 1 female cub died from a fall when the carrying sling mechanism failed (Table 11).

The other female cub (#100) was located on Mirror Plateau, about 45 air miles from the capture site.

3 - On 9 August 1971 a male cub and an adult female were culvert trapped in Pelican Campground YNP, and placed together at Buffalo Lake YNP. The cub was eartagged.

This male was identified after capture on 17 July 1974 in a culvert trap, outside the recently established fenced land-filled dump serving West Yellowstone. He was immobilized, tagged, radio-collared and released. At a known age of 3 years, this bear was designated as #15 in the Interagency Grizzly Bear Study. He was again culvert captured and released at the dump on 21 August 1974. After a culvert recapture at Rainbow Point (Hebgen Lake), Montana on 29 August he was transferred by vehicle to Sunlight Basin, Wyoming and released at a site approximately 120 air miles from Rainbow Point.

After an absence of a year, #15 (5 years old) was culvert trapped on 16 August 1976 at Rainbow Point, handled and released.

During 1977, #15 was culvert trapped 3 times in the West Yellowstone area: 11 May at Fir Ridge; 20 May near the town of West Yellowstone, and on 21 September at Cougar Creek. After each capture and handling the bear was released at the capture site.

Grizzly #15 was culvert captured one time in each of the following 3 years at the same trap site at Fir Ridge, examined, and released at the site on: 10 August 1978, 27 July 1979, and on 18 June 1980. Bear #15 was recaptured, in a culvert trap site at Fir Ridge, reinstrumented, and released on 29 June and 20 September 1981.

During 1982, bear #15 (11 years old) was culvert trapped 3 times: at Richards Pond YNP on 12 August and released at site; on 26 September about 4 miles west of West Yellowstone and transported by vehicle and released at Blacktail Patrol Drive in YNP, (38 air miles from capture site); and on 15

October he was captured at Madison Fork near West Yellowstone, and again relocated by vehicle to Blacktail Cabin YNP about 38 air miles from capture point.

On 26 June 1983 a bear killed a human at Rainbow campground nearby Hebgen Lake. Snares were set at the site and grizzly #15 was captured. Subsequent field and laboratory information warranted dispatching this bear (Tables 3 and 11). Previous details of range and movements from radio and sightings of this bear are known (Knight, R., et. al., 1985).

Hunting

Grizzly bear hunting season dates coincided with general elk and deer seasons in Montana. The 1982 season was established by Montana Fish and Game Commission action with imposed limitations of Rules and Regulations of the 28 July 1975, Federal Register which permitted a hunting season only in the northwest grizzly populations and established an annual limit of 25 grizzlies by man-related nonhunting and hunting mortalities.

Eighteen hunting districts representing 7,884 mi^2 in northwest Montana were open to grizzly bear hunting in 1983. Three hunting districts had seasons during 15 September-27 November, a season of 25 October-15 November in 2 districts, and 13 districts had a general season of 25 October-27 November. This hunting season in all districts was subject to closure on 48-hours notice when the total quota of 25 had been reached.

Numbers of grizzly bear hunting licenses issued in 1983 were unlimited, but they had to be purchased before 31 August. License fees for 1983 were $25 for residents, and $175 for nonresidents. A trophy license of $25 for resident and nonresidents was required after taking a grizzly.

A total of 598 grizzly bear hunting licenses were issued in 1983, a decline of 14% from 1982 and 25% from 1981. Numbers of resident licenses decreased 21% while those for nonresidents increased 25% (Table 10). Nonresidents represented 27 states along with Canada, Alaska and West Germany. Most were from California and Pennsylvania (26%) followed by Texas and Washington (17%).

Eight grizzlies taken by hunters during 1983 were from 4 hunting districts. Bears were taken from the same hunting districts in 1982 and from 2 of the same districts in 1981. In 1984 the 12 taken from 5 hunting districts indicate 2 districts also provided hunter success in 2 prior years (Table 4).

Due to early and heavy snowfall in some mountain areas there has been a traditional early hunting season opening on September 15 that ran concurrently with the general big game season. Grizzly hunting seasons were inclusive in hunting districts 280 and 150. Since 1981, HD 150 was segmented and included district 151.

Table 10. Numbers of grizzly bear hunting licenses and grizzly bears harvested during 1975-1983 in Montana.

	No. Hunting Licenses Sold			No. Trophy Licenses Sold[a]			
	Resident	Non-resident	Total	Resident	Non-resident	Total	Percent Success
1975[b]	716	270	986	9	4	13	1.3
1976[c]	389	124	513	10	1	11	2.1
1977[c]	411	102	513	3	2	5	1.0
1978[d]	497	119	616	7	0	7	1.1
1979[d]	472	112	584	9	2	11	1.9
1980[d]	537	123	660	7	4	11	1.7
1981[e]	675	124	799	7	4	11	1.4
1982[f]	616	83	699	15	2	17	2.4
1983[f]	485	113	598	7	1	8	1.3
1984[g]	470	53	523	12	0	12	2.3

a - Trophy license ($25 resident and nonresident) required after taking a grizzly.

b - Hunting license fee of $5 for residents and $35 for nonresidents with deadline for purchase June 30.

c - Hunting license fee of $25 for residents and $125 for nonresidents; not available after June 30.

d - Hunting license to be purchased before June 15.

e - Hunting license fee of $25 for residents and (increased to) $150 for nonresidents; not available after June 15.

f - Hunting license fee of $25 for residents and (increased to) $175 for nonresidents; not available after August 31.

g - Hunting license fee (increased to) $50 for residents and (increased to) $300 for nonresidents; not available after August 31.

Dates of hunter harvest in these 2 areas indicate most grizzlies were taken in late September and early October, and many were sub-adults (Fig. 2).

Two marked grizzlies were taken by hunters each year in 1983 and 1984 compared to 4 in 1982, 1 in 1981, 2 in 1980 and 1 in 1979 (Tables 2 and 5).

In 1983, the 8 harvested grizzlies included 7 males; ages available for 6 (average 4.7 years) were: 3, 3, 4, 4, 5, and 9 years; The single female was 3 years old. These compare to: 8 males (average 4.5 years) and 9 females (8.3 years) in 1982, 8 males (3.9 years) and 3 females (8.3 years) in 1981, and 6 males (12.3 years) and 5 females (9.8 years) in 1980.

The known mortality in northwest populations from 1975-1983 totaled 173 grizzlies (101 males, 70 females, and 2 unknown sex). This total included 2 bears adjacent to the quota area, 2 bears from enforcement investigations after the annual report and 5 cubs of the year (Table 9, 11).

These harvest data from 5 initial and early seasons (1975-1979) are compared with the later 4 recent seasons of 1980-1983 (Table 10).

1. Fewer mortalities (9) occurred during recent than previous seasons. The female ratio of 35% in recent seasons compared to 45% in the earlier years. Proportions of young (5 years or less) female mortalities declined from 54% in the early period to 46% in recent seasons.

2. The average ages of male mortalities were slightly lower in recent seasons (6.1 to 5.9 years) while those of females were greater in recent seasons (7.3 to 8.8 years). The oldest age noted was a 25-year-old female. For the early and recent seasons respectively, 10 and 13 bears were 10-15 years, 3 and 5 were 16-19 years, and 5 and 3 were 20-25 years.

Licensee Response

A total of 598 grizzly bear hunting licenses were issued to 485 (81%) residents and 113 (19%) nonresidents in 1983. Each 1983 grizzly bear hunting licensee was asked to provide information via postal questionnaire about their hunting activities and comment on grizzly bear management in Montana (Appendix). No follow up was made after initial inquiry. Most licensees had a grizzly hunting license that was secondary to their hunting for elk or other big game species; they indicated they would take a grizzly if the opportunity occurred (Greer 1976).

Replies included 317 (65%) residents and 86 (76%) nonresidents, of which 205 (65%) and 71 (83%), respectively, actually "hunted" for grizzlies during the 1983 season.

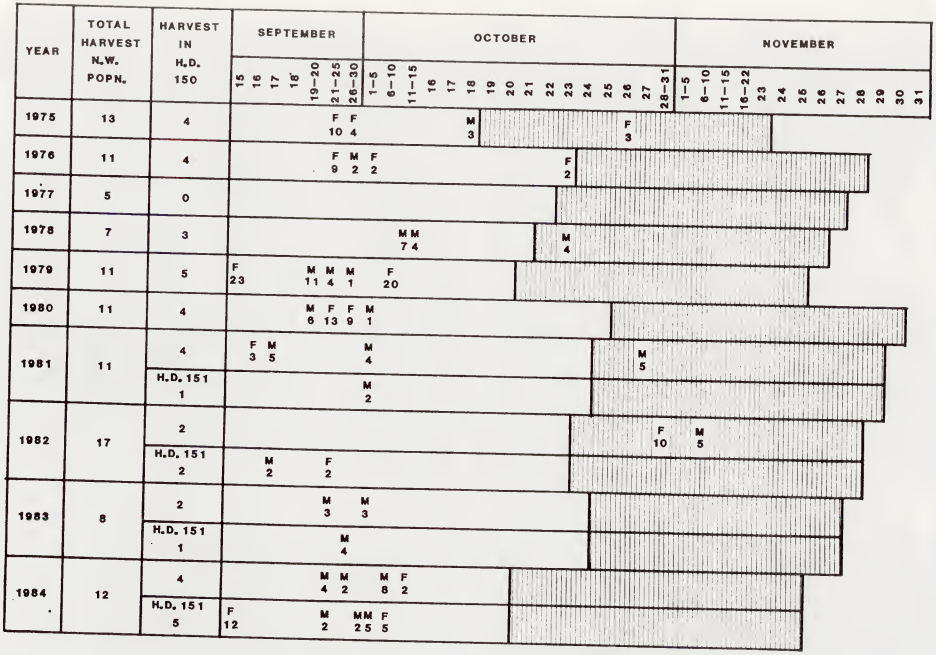


Figure 2. Date of hunter harvest of grizzly bears (by sex & age) during early and regular seasons in HD150 (including 151 since 1981) of the northwest grizzly populations since the imposed 25 quota in 1975.

Table 11. Ratio and age groups of total known man-caused grizzly mortalities[a] in the northwest Montana population 1975-1983.

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1975-1979	1980-1983	1975-1983
Sample	22	23	13[b]	14	19	24	17	24[b]	15[c]	91	80	171
Male %	41	57	54	50	74	58	76	58	73	55	65	60
Female %	59	43	46	50	26	42	24	42	27	45	35	40
Average Male Age	5.61	4.69	4.71	6.86	8.00	8.36	5.77	4.61	4.45	6.09	5.90	5.94
Average Female Age	6.19	6.35	5.67	9.29	11.20	10.30	7.25	7.90	9.00	7.29	8.82	7.91
% Male 5 year or less	67	69	71	71	43	43	69	79	80	62	67	64
% Female 5 year or less	54	50	67	57	40	30	50	60	50	54	46	51

a - Includes 4 cubs of year, hunting, nonhunting, outside boundary, and subsequent enforcement specimens.
b - Does not include one specimen with unknown sex and age.
c - One specimen with unknown age.

Table 12. Sex and age (in years) of marked and unmarked known grizzly mortalities from the southcentral population 1975-1984.

	1975 M[a]	1975 F[a]	1976 M	1976 F	1977 M	1977 F	1978 M	1978 F	1979 M	1979 F	1980 M	1980 F	1981 M	1981 F	1982 M	1982 F	1983 M	1983 F	1984 M	1984 F	
Marked	-	-	2 4	11		16	2 3 4	5	12	8	2	3	3 5 9 22		2 4 4 14	2 15	1 12	6 12	4 7 8 (AD)	2 13	(33)
Unmarked	-	-	8		1/2 1/2 1 10 11 20	5 7 11			7		4 13	8	3	8	(1)[b] 3 3 7 7	7 15 15		1/2	1 (AD)	C	
Total Mortality	0		4		10		4		3		5		6		14						(28) (61)

[a]M=male and f=female

[b]Sex unknown

Big game hunting seasons in 1983 (including that for grizzlies) began September 15 in hunting districts 150, 151 and 280 and runs concurrently with the regular season, October 25 to November 27. Questionnaire respondents indicated that 43% residents and 85% nonresidents hunting during the early season, and, 77% and 20% respectively, hunted in the regular season.

Tagged Grizzlies

Ongoing grizzly studies in and adjacent to Montana during the past decade have included the capture, mark, and release of bears. Known mortalities in the northwest population during 1975-1983 have totaled 173 grizzlies, including 28 marked bears of which 10 were taken by hunters (Table 11).

During the same period, studies for marking grizzlies were more intensive in the Interagency Yellowstone study area. Montana excluded hunting in this area in 1974 and Wyoming in 1975. Of the total known man-caused mortality of 52 grizzlies, 27 (52%) were marked bears (Table 12) compared to 16% in the hunted northwest population.

Table 13 summarizes responses for areas and time hunted in the 18 districts open to hunting.

Table 13. Time hunters spent hunting during 1983 seasons in Montana.

Hunting District	Type Season	No. Hunters Res.	No. Hunters Nonres.	No. Days Hunted Res.	No. Days Hunted Nonres.
101	Reg	11	--	72	--
110	Reg	45	1	358	2
130	Reg	20	2	115	16
140	Reg	7	3	42	13
141	Reg	16	--	124	--
150	Early	43	36	577	348
150	Reg	12	4	86	14
151	Early	21	7	175	56
151	Reg	6	2	31	9
280	Early	19	15	122	166
280	Reg	2	1	12	6
281	Reg	2	--	17	--
406	Reg	9	--	27	--
415	Reg	4	--	24	--
422	Reg	2	2	23	12
424	Reg	15	--	142	--
427	Reg	6	--	27	--
428	Reg	8	--	57	--
441	Reg	12	1	67	1
442	Reg	23	1	219	10
450	Reg	2	--	7	--
TOTAL		296	75	2,324	653

Forty-eight (23%) of 205 residents and 23(32%) of 71 nonresidents reported seeing at least 1 bear. Of these, 89% of the residents and 52% of nonresidents distinguished the bear as a grizzly in 12 hunting districts. Residents observed 1-11 grizzlies each, for a total of 96 bears; and nonresidents sighted from 1 to 3 grizzlies totaling 15. Most observed 1 grizzly (46 residents, 12 nonresidents) and 12 residents noted pairs, with 6 seeing 3 or more at one time. These observations were consolidated (Fig. 3) from replies marked on a map enclosed to each licensee.

The 1983 data compared to similar surveys in 1980 when 84 hunters reported seeing a total of 185 grizzlies (Fig. 4); in 1976, 68 hunters observed 130 (Fig. 5); in 1975, 101 hunters reported seeing 191 (Fig. 6); and in 1974, 111 hunters noted 249 grizzlies (Fig. 7) (Greer, 1975, 1976, 1977 and 1982).

Half of the 69 respondents observed a grizzly in the open; the other half saw them on the edge of timber. Distances between respondent and bear ranged from 30 feet to 1 mile; 27 hunters saw grizzlies under 100 yards, 19 others were up to 400 yards, and another 23 noted distances from 500 yards to a mile.

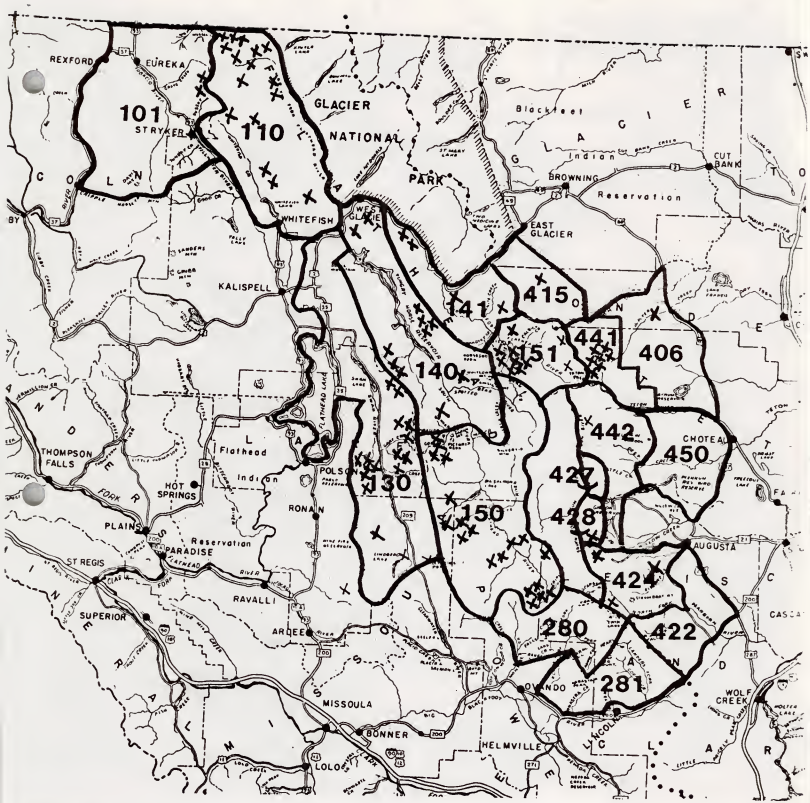
Hunters (56) noted that the grizzly was observed from a few seconds for 7 hunters, 13 watched for 15-60 seconds, 19 watched for 2-5 minutes and 22 observed from 10 to 60 minutes. Thirty of 41 residents and 8 of 12 nonresidents replied that they could have shot the bear. However, only 5 residents and 2 nonresidents reported they did shoot at the grizzly.

Hunters were also asked if they saw any bear sign and, if they did, to indicate locations on the map. Although distinguishing between grizzly and black bear sign is questionable (even among experienced field personnel), similar data from several surveys indicate wide spread distribution and spot intensities of bears throughout and adjacent to the grizzly hunting districts (Figs. 8, 9, 10, 11, 12).

About 35% of the resident and 25% of nonresident respondents commented on Montana's grizzly bear management program. Thirty-nine percent of the residents and 50% of nonresidents were satisfied with the program (Table 14).

Black Bear

Grizzly licensees also having a black bear license were 86% (270) of 313 residents and 84% (72) of 86 nonresidents. Residents each observed 1-44 black bears for a total of 659 and 24 nonresidents each saw 1-8 for a total of 66 black bears. About 10% saw at least 1 black bear and 42% saw 2 or 3. Of these, 31 residents killed a black bear (in 16 hunting districts) and 4 nonresidents shot a bear (in 4 districts).



HUNTING DISTRICTS OPEN FOR GRIZZLY BEAR IN 1983

Figure 3. Locations of grizzly bears observed by licensed grizzly bear hunters during the 1983 hunting season.

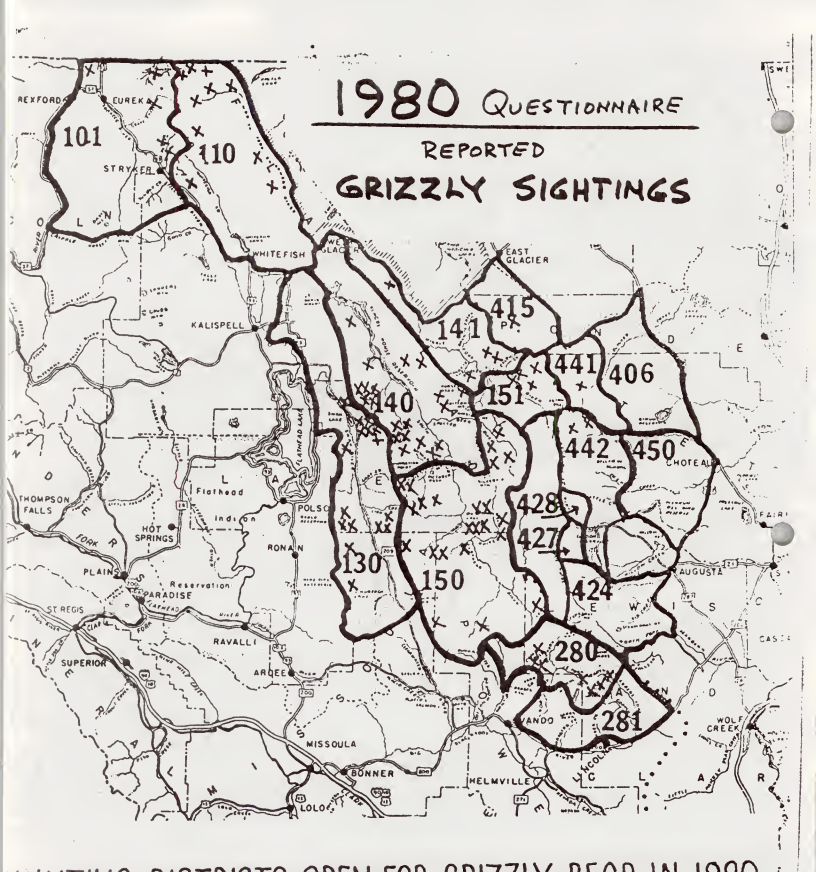


Figure 4. Locations of grizzly bears observed by licensed grizzly bear hunters during the 1980 hunting season.

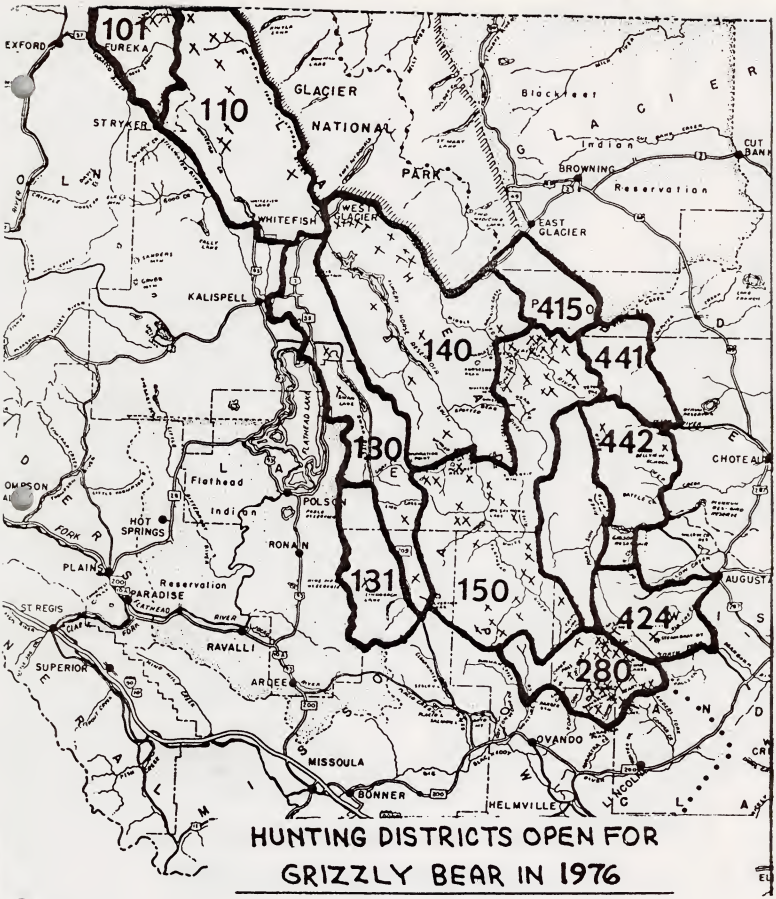


Figure 5. Locations of grizzly bears observed by licensed grizzly bear hunters during the 1976 hunting season.

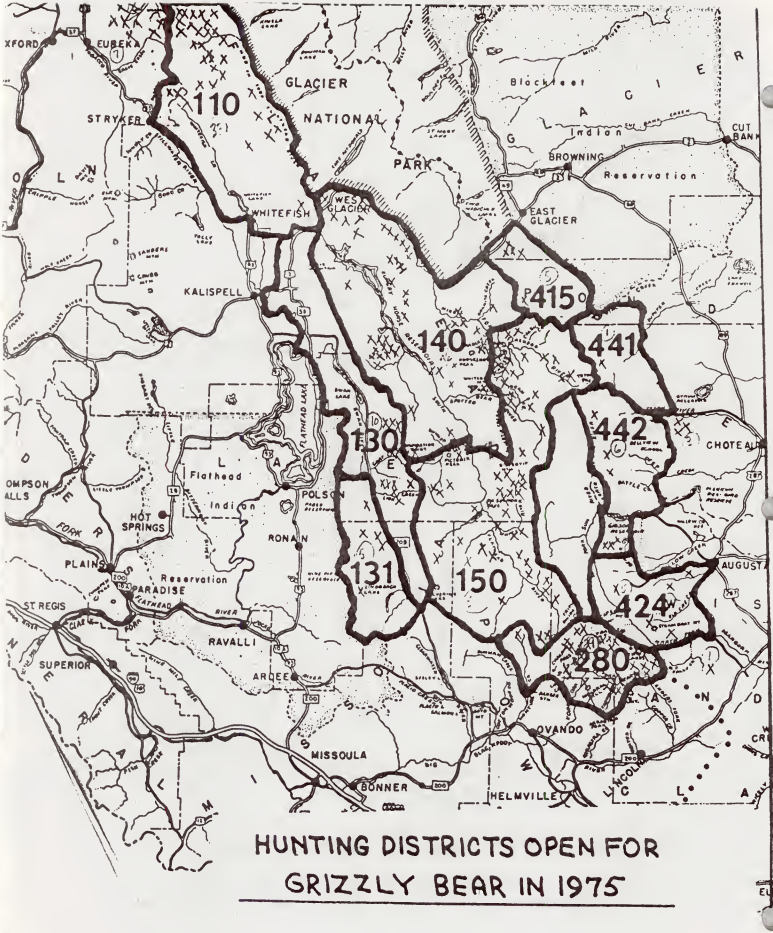


Figure 6. Locations of grizzly bears observed by licensed grizzly bear hunters during the 1975 hunting season.

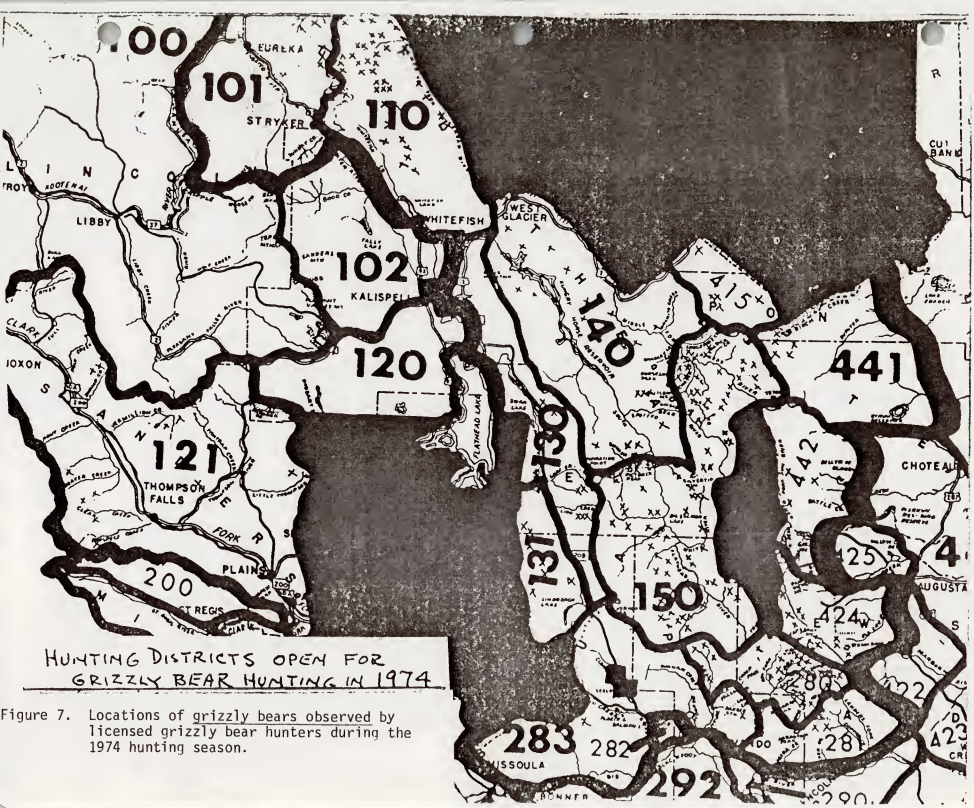
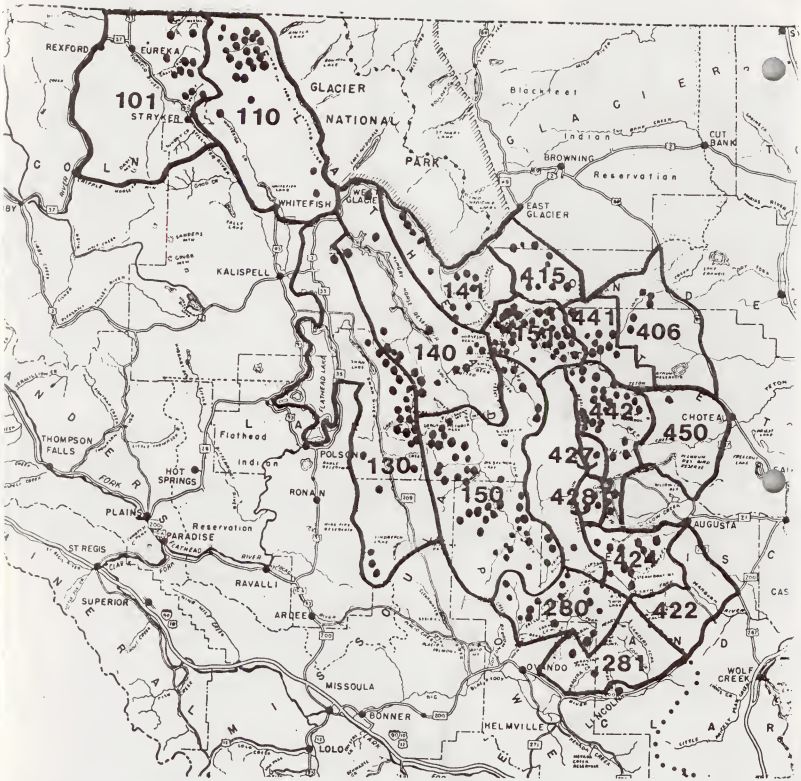


Figure 7. Locations of grizzly bears observed by licensed grizzly bear hunters during the 1974 hunting season.



HUNTING DISTRICTS OPEN FOR GRIZZLY BEAR IN 1983

Figure 8. Locations of bear sign indicated by tracks, seats, digging or clawed trees that were noted by hunters during the 1983 season.

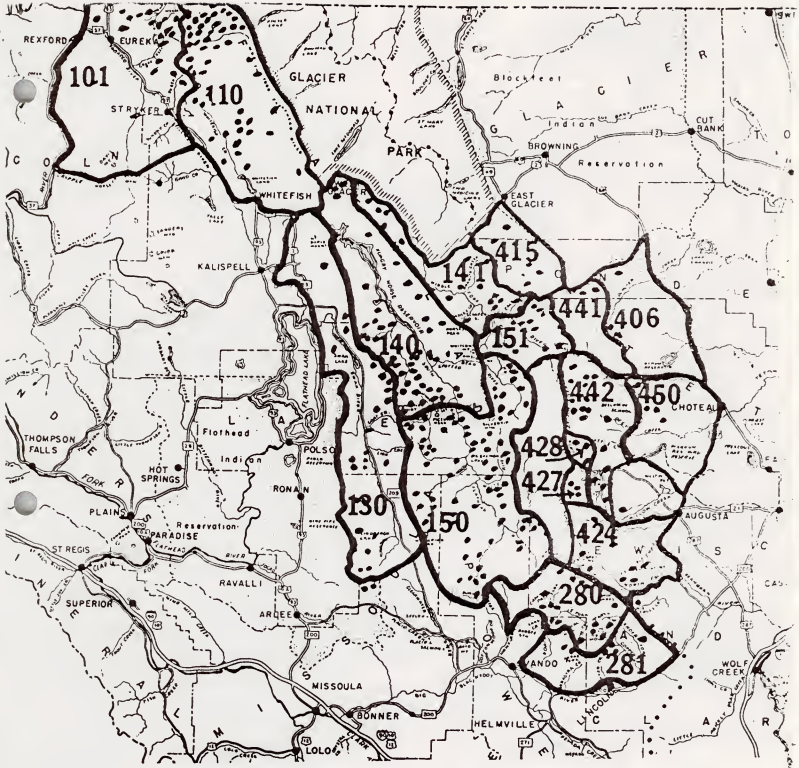


Figure 9. Locations of bear sign indicated by tracks, seats, digging or clawed trees that were noted by hunters during the 1980 season.

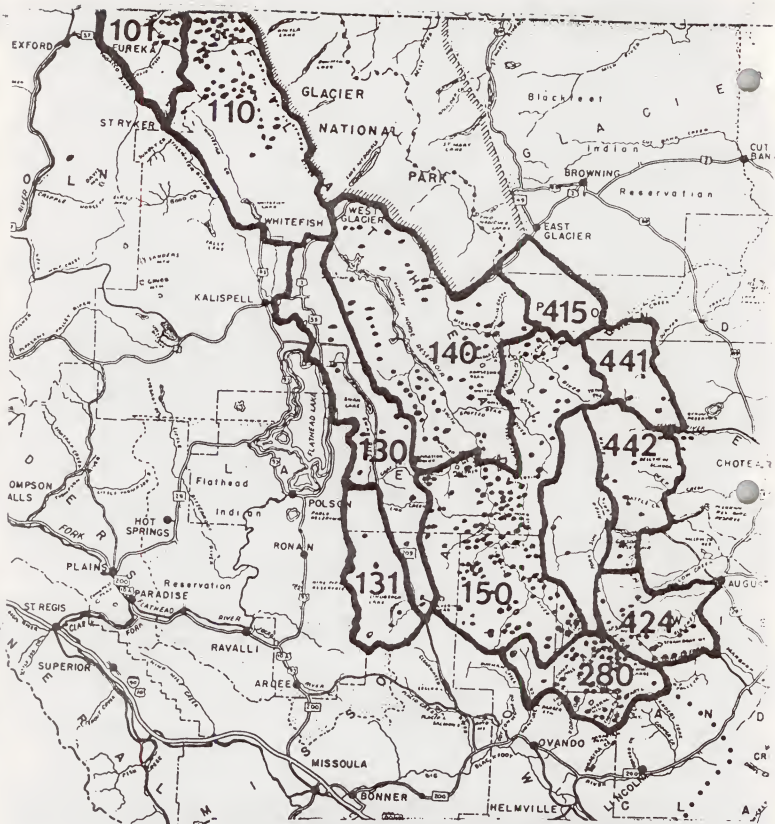


Figure 10. Locations of bear sign indicated by tracks, seats, digging or clawed trees that were noted by hunters during the 1976 season.

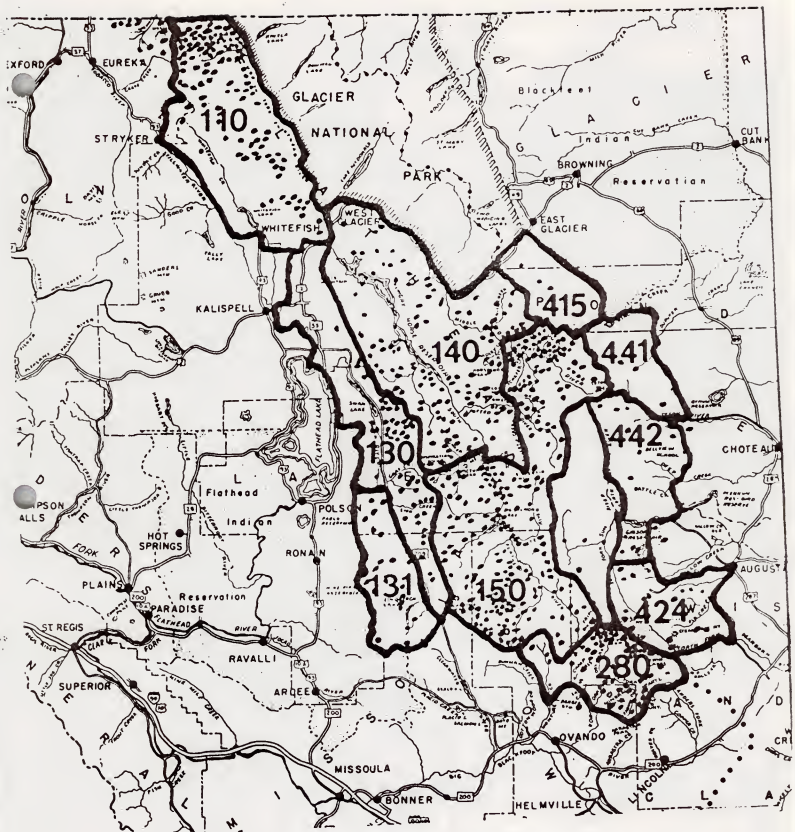


Figure 11. Locations of bear sign indicated by tracks, seats, digging or clawed trees that were noted by hunters during the 1975 season.

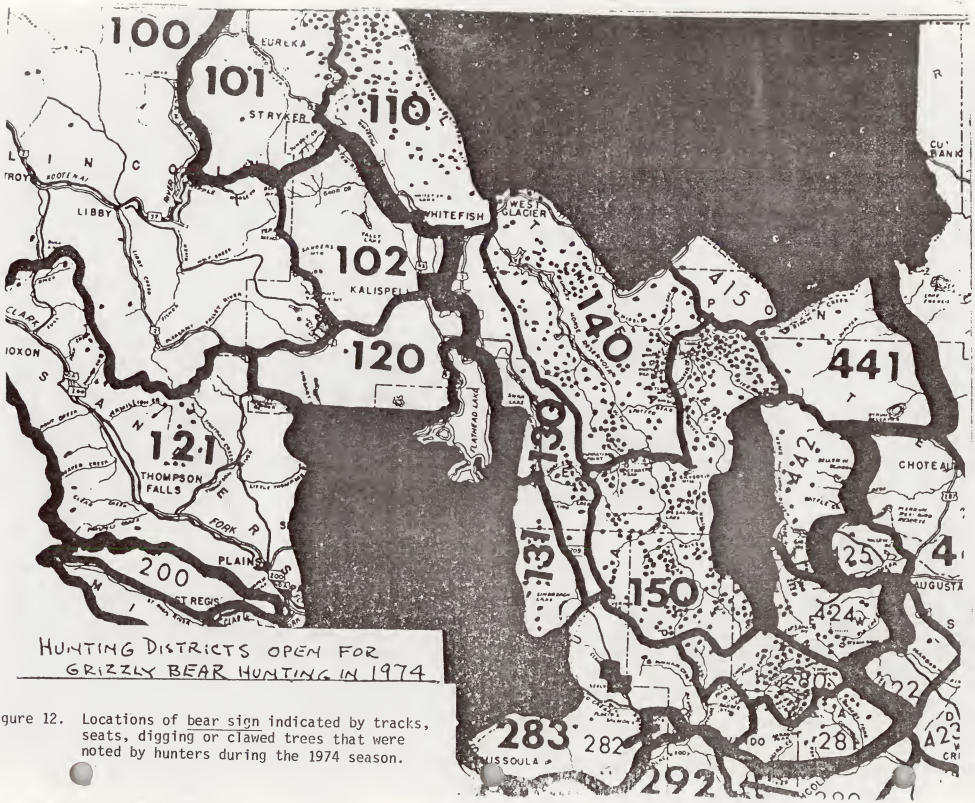


Figure 12. Locations of bear sign indicated by tracks, seats, digging or clawed trees that were noted by hunters during the 1974 season.

Table 14. Summary of comments by hunters regarding Montana's grizzly bear management program, 1983.

Residents:	
OK as is, keep it open, need season	44
Do something about mistakenly killing grizzlies for blacks	13
Open early season for bow hunters	10
Allow license holders to shoot problem bears	9
Grizzly numbers increasing	6
Disappointed at HD 140 closure	4
Stop poaching	3
Don't handle bears	3
Open spring season	3
Close spring black bear season	3
Allow a few to be taken in either park[a]	2
Open Yellowstone Ecosystem to hunting	2
Bought license for protection only	2
Don't increase price of tag	2
Restrict number of guides by area	1
Grizzly numbers decreasing	1
Stop drugging bears	1
Increase tag price	1
Attach questionnaire to license	1
Move license purchase date to September 1	1
Nonresident:	
OK as is	10
Primarily hunting for elk	3
Increase fines for poaching	2
Educate hunters-black vs. grizzly identification	1
Don't close areas to protect grizzlies	1
Allow grizzly to become extinct	1
Too many hunters	1
Grizzly ate hunter's elk	1

[a] Refers to Yellowstone and Glacier National Parks

Southcentral vs. Northwest Populations

A minimum of 102 southcentral population grizzlies have been marked since the Interagency Grizzly Bear Study began in 1974. Additional grizzlies were marked in Yellowstone National Park during prior studies and under previous policies. Currently, all trapped grizzlies are radio collared and routinely monitored as weather conditions permit flights.

The absence of radio contact with some bears may indicate possible mortalities (Knight et al 1983). Some unmarked bears

may also be suspected mortalities (Greer 1980, 1981, Roop 1982, 1983). Because a few bears have been recaptured after radio contact was lost for several years, probable or possible mortalities and natural mortalities are not considered tangible in man-caused mortality documentation.

Known man-caused mortality in the area for 1983 was 6 grizzlies, with 4 in Montana and 2 in Yellowstone National Park (Table 15). In 1984 there were 9 grizzly mortalities, with 4 in YNP, 1 in Montana, 2 Wyoming and 2 Idaho (Table 16).

Known man-caused grizzly mortality in the Interagency grizzly study area since 1975 has totaled 52 including 32 males, 19 females and one unknown sex (Table 17). Although these samples are smaller than those for the northwest population, some data (Tables 10, 15) indicate that each area has viable populations, and that the southcentral population is not declining.

The southcentral population experienced 37% female mortality compared to 40% in northwest populations. The average age of 9.3 years for female mortalities in the southcentral population is older than the 7.9 years for the northwest population. Juvenile (5 years or less) female mortality of 26% in the southcentral population is well below the 51% in the northwest population.

Craighead et al. (1982) reported a sample of 577 live marked and unmarked adult grizzlies (5 years or older) in the southcentral population during 1964-1970 that had a sex ratio of 46% males to 54% females. During these 7 years, the female ratio ranged from 46 to 61%. The average female percentage decreased slightly to 51, 46, and 48%, respectively, in the latter 3 years of the period. Thirty-nine marked bears in current studies of the same population, (Knight and Blanchard 1983) showed 51% males in the 1982 population.

During 1959-1971, Craighead et al. (1982) indicated a composite sex ratio for 219 subadult (4 years or less) marked grizzlies of 60% males and 40% females; annual data were not available. Knight and Blanchard (1983) noted that the 1982 subadult ratio from 63 marked bears was 63% males and 37% females.

Known man-caused grizzly mortalities are compared between northwest and southcentral populations for 1975-1983 (Tables 10, 15). The latter population is compared for the periods 1959-1973 and 1975-1983 (Table 18).

Sample sizes are different, even when weighted for equal years. Some studies classify subadult grizzlies as 5 years of age or less, others use 4 years or less. When small samples are changed by one or two specimens, considerable differences result and they are to be evaluated with reservation.

Previous discussion of grizzly mortality over a 15-year period were noted as verified (Craighead et al. 1982). Because no further explanation for documented mortalities were included and

Table 15. Known nonhunting man-caused grizzly mortalities during 1983 in the southcentral population (Montana, Wyoming, Idaho and Yellowstone National Park).

Lab No.	Area	Sex	Age[a]	Date	Marked[b]	Skull Size[c]	Mortality Category[d]	Location
1-179058	Mont	M	1	June 22	Yes(#95)[e]	15-3/16	TRAP-B[e]	Gardiner Dump Sec. 16, T9S, R8E
2----	Mont	F	12	May 22	Yes(#10)	---	LIVE-D	Gardiner Dump Sec. 16, T9S, R8E
3-179059	Mont	M	12	June 26	Yes(#15)	23-10/16	CONTROL-C	Rainbow Point Sec. 24, T12S, 44E
4----	Mont	F	6	Aug 21	Yes(#60)	---	LIVE-D	West Yellowstone Sec. 34, T16N, 45E
5-179062	YNP	M	1	July 7	Yes(#94)	16-3/16	CONTROL-C	Madison Campground Sec. 20, T13S, R116W
6-179067	YNP	F	C	Aug 24	No	---	TRAP-B	Head Timothy Creek Sec. 32, T55N, R13E

[a]Cementum annulations plus fraction of current year starting February 1
[b]With one or more: ear tag, tattoo, radio collar
[c]Maximum length plus maximum width in inches (Boone and Crockett score)
[d]Mortality categories: B-Trap casualty, C-Control, D-live (see listings in text)
[e]Individual grizzly in study

Table 16. Known nonhunting man-caused grizzly mortalities during 1984 in the southcentral population (Montana, Wyoming, Idaho and Yellowstone National Park).

Lab No.	Area	Sex	Age[a]	Date	Marked[b]	Skull Size[c]	Mortality Category[d]	Location
1----	YNP	F	C	July 5	No	---	TRAP-B	Frank Island
2----	YNP	F	2	Aug 1	Yes(#93)[e]	---	LIVE-D	Indian Ck. Campgnd
3-179205	YNP	M	7	Aug 18	Yes(#88)	21-8/16	CONTROL-C	to Jonkel to Zoo SD Fishing Bridge
4----	YNP	M	8	Oct 16	Yes(#113)	---	LIVE-D	Lake Area to Zoo BC
5-179211	Mont	M	1	Sept 14	No	16-10/16	TRAP-B	West Yellowstone
6----	Wyo	M	4	Sept (?)	Yes(#108)	---	TRAP-B	UTM 6040-49644
7----	Wyo	M	AD	Sept 23	Yes(#105)	---	ILLEGAL-A1	Fishawk & Avalanche Creeks
8-179209	Ida	F	13	Sept 13	Yes(#38)	20-10/16	TRAP-B	Two Top
9----	Ida	M	--	Oct (?)	No	No Skull	ILLEGAL-A5	Sec. 21, T15N, R44E 20 mi. west of Two Top

[a] Cementum annulations plus fraction of current year starting February 1
[b] With one or more: ear tag, tattoo, radio collar
[c] Maximum length plus maximum width in inches (Boone and Crockett score)
[d] Mortality categories: B-Trap casualty, C-Control, D-live (see listings in text)
[e] Individual grizzly in study

Table 17. Ratio and age groups of total known man-caused grizzly mortalities in the southcentral population (Montana, Wyoming, Idaho, and Yellowstone National Park), 1975-1983.

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1975-1979	1980-1983	1975-1983
Sample	0	4	10	4	3	5	6	13[a]	6	21	30	51
Male %	-	75	60	75	67	60	67	62	50	67	60	63
Female %	-	25	40	25	33	40	33	38	50	33	40	37
Average male age	-	4.67	7.17	3.0	9.5	6.33	5.00	5.50	4.66	4.78	5.38	5.12
Average female age	-	11.00	9.75	5.0	8.0	5.50	15.00	10.80	6.16	9.00	9.45	9.28
% male 5 years or less	-	67	50	100	0	67	75	63	67	57	67	63
% female 5 years or less	-	0	25	100	0	50	0	20	33	29	25	26
% male 4 years or less	-	67	50	100	0	67	50	63	67	57	61	59
% female 4 years or less	-	0	0	0	0	50	0	20	33	0	25	16

[a]sex of cub mortality unknown

Table 18. The known sex and age group (4 year old and less) grizzly mortality reported by Craighead et al. (1982) for the Yellowstone study area for 1959-1973; and the currently known man-caused mortality for the southcentral population, 1975-1983.

	Previous Mortality			Current Mortality		
	1959-67	1968-73	1959-73	1975-78	1979-83	1975-83
	(9 yrs.)	(6 yrs.)	(15 yrs.)	(4 yrs.)	(5 yrs.)	(9 yrs.)
Sample	101	150	251	18	33	51
Male %	50	57	55	67	64	65
Female %	50	43	45	33	36	35
% male 4 years or less	69	47	59	67	52	58
% female 4 years or less	31	53	41	0	25	17

there was no mention of catalog or accession of mortalities, those mortalities may include possible, probable, rumored and natural mortalities.

Problem Bears

Each year several grizzlies involve encounters with, or pose potential hazards to, humans, livestock, or property. Various odors and amounts of refuse are probable attractants within an occupied seasonal range of some grizzlies. Also, some cubs are occasionally or repeatedly imprinted with association of various food sources and close proximity to humans, property, or campgrounds.

The Montana Department of Fish, Wildlife and Parks has dual responsibilities for public safety and grizzly bear welfare, and policies and procedures for safeguarding both have been established. Efforts to minimize conflicts, to determine and remove the cause, and to rectify these situations are continually being improved. Department and interagency programs are evaluated for effectiveness each year with state and federal agencies.

Establishment or nonestablishment of translocated problem bears may only be determined by identifying individuals with marking (tags, tattoos). Further monitoring of bear movements is warranted by frequent aerial contact and may be required on grizzly relocations in Montana and in the Interagency study area. However, monitoring of some of these bears in northwest populations is lacking due to funding.

Each year since 1975, British Columbia, Alberta, and the Churchill laboratory have evaluated and accepted at least one Montana grizzly bear (total of 12 through 1982) that were not relocatable in Montana. In 1983, one grizzly was forwarded to British Columbia and one to a Kansas zoo. During 1984, 2 grizzlies were sent to zoos.

Interagency Grizzly Bear Study Area

Interagency management personnel recognize that grizzly complaints and conflicts in various situations require immediate control action (i.e. presence of one or more grizzlies in an area of public concern, and traps are set). Once a grizzly is captured and identified, its actions and known history are evaluated and a decision is made for disposition by administrative personnel. Each unmarked grizzly is tagged, tattooed, radio collared, and relocated within the study area.

Problems with grizzlies were significant in 1981 (Greer 1982), they continued through 1982-84 and are expected during 1985. Most control actions occur from May through October. Yellowstone National Park plays a unique role because it provides the only alternative for relocation sites; few, if any, are available in national forests of Montana, Wyoming, and Idaho within the same ecosystem (Brown and Fowler 1982, 1983, 1984 pers. comm.).

A total of 50 individual grizzlies were captured 105 times during 1981-1984: 34 were captured in only 1 year, 12 were repeats for 2 years, 3 for 3 years, and 1 for 4 years. Fifteen were removed from the population. These control actions in the Interagency Yellowstone study area are given in Tables 19, 20, and 21.

Since 1975, a total of 99 bears had been marked as study bears. With known and assumed losses over the years it is speculated that in 1983 there were 57 study bears in the population (Roop 1985, Knight et al. 1985 and Fowler, S. pers. comm.). During 1983 control actions involved 23% of these marked study bears (Tables 17 and 19).

In 1984, 6 marked grizzlies were removed from the population and 22 were added for an approximate total of 73 in the population, and therefore 27% of the marked bears were involved in a control action (Table 18 and 19).

Parasites

Samples from 34 grizzlies in 1983 and 1984 showed that 71% were positive for trichinella, with an average of 28.5 larvae per gram (range 0.04-144.9 LPG). This is in comparison with 34 samples from black bears in the same years and only 6% (2) were positive. Similar infections for and between these species have occurred over the past 15 years (Worley, pers. comm).

CONCLUSIONS AND RECOMMENDATIONS

Data from man-caused grizzly mortalities must be confirmed and qualified, recorded in a recognized central repository, and summarized annually. Known man-caused mortalities are considered tangible when a carcass or portions thereof are available for examination, and that are documented with field information from the collector. A few mortalities become known from resulting enforcement investigations after a hunting season and are subsequently documented to the year they occurred. Mortalities are essential for evaluation of population welfare and will become more valuable in the future.

Misuse of the term "poaching" (profiteering) has resulted in significant confusion and misrepresentation regarding status of the grizzly in Montana during recent years. Therefore, mortality records from the southcentral population were reviewed to quantify categories of known man-caused mortalities. Only 12% of the 60 known mortalities during 1975 through 1984 can be designated as resulting from poaching. In the northwest population, 1975-1984, the known non-hunting man-caused mortalities of 83 grizzlies were classified and only 19% were considered poaching.

The public misconception about poaching should be correctly identified by educational efforts within agency management and research programs. Correcting this state and national image is requisite for valid public perception that grizzly populations

Table 19. Individual grizzlies captured during control actions and distances to relocations in 1983.

Interagency Yellowstone Study Area				Locations Captured						Relocation		
				Montana								
	1983	SEX	AGE	Gardiner Vicinity	West Yellowstone	Cooke City	Yell. Natl. Park	Wyoming	Idaho	Air Miles Apart	Via Truck, Chopter	
1	May 21	F	1	93[a]						35	C	Spruce Creek, YNP
2	May 22	F	12	10						465	T	To Brit. Col., abt. 25 a/m north U.S. Border
3	May 22	M	1	94						38	C	Pelican Creek, YNP
4	May 22	M	1	95						38	C	Pelican Creek, YNP
5	Jun 20	M	1	95						X	--	Trap Casualty
6	Jun 20	M	1	94						63	C	Two Ocean Plateau YNP
7	Jun 26	M	12		15					X	--	Dispatch
8	Jul 7	M	1				94			X	--	To Missoula-Dispatch July 27
9	Aug 7	M	2					99		20	C	Internal-to Turpin Meadow
10	Aug 14	M	6				88			23	C	Internal-to Trapper Creek
11	Aug 21	F	6		60					X	--	To Missoula, to Kansas Zoo
12	Aug 21	F	C		(No #)					X		Trap Casualty
13	Aug 21	F	C		100					45	C	Mirror Plateau, YNP
14	Aug 23	F	2			67				50	T,C	Joseph Peak, YNP
15	Aug 27	F	2				67			32	C	Internal-to Panther Creek
16	Sep 9	F	12						38	46	T,C	Antelope Creek, YNP
17	Sep 9	F	1						101	46	T,C	Antelope Creek, YNP
18	Sep 9	F	1						102	46	T,C	Antelope Creek, YNP

NORTHWEST BORDER POPULATIONS				BIR	Pole Bridge	Mid F. Flat	Dupuyer	W. Glac. Dump	FIR		
	Jul 1 (Sep 26)	M	2-3	20						55	Bunker Creek, Sec 10, T24N, R16W
2	Jul 15	M	2-3		C-2382 C-2383						(Legally killed, Sec 13, T23N, R16W)
3	Aug 11	M	2-3			C-2382 C-2383				67	Upper Puzzle Creek, Sec 13, T28N, R13W
4	Sep 13	F	6-9							X	To Missoula-relocate back to popn.
5	Sep 13	F	C						420	35	Mid F. Flathead-Sec 2, T28N, R14W
6	Sep 13	M	C						113-117	35	Mid F. Flathead-Sec 2, T28N, R14W
	Sep 23	M	C						125	35	Mid F. Flathead-Sec 2, T28N, R14W
7	(Oct 3)						550			57	Bartlet Creek, Sec 15, T20N, R14W
8	Oct 17	F	3-5					151 4039		48	(Legally killed, Sec 23, T22N, R14W) Bunker Creek, Sec 10, T24N, R16W

a - Individual identity

Table 20. Individual grizzlies captured during control actions and distances to relocations in 1984.

Interagency Yellowstone Study Area	1984	SEX	AGE	Locations Captured: Montana: Boulder River	West Yell.	Buffalo Fork	Gardiner Vicinity	Gravelly Mtns.	YNP	Relocation: Air Miles Apart	Via Boat, Vehicle	
1	Jul 5	F	AD						G-19	8	B	Internal-to Flat Mtn. Arm YNP
2	Jul 5	F	C						G-20	8	B	Internal-to Flat Mtn. Arm YNP
3	Jul 5	M	C						G-21	8	B	Internal-to Flat Mtn. Arm YNP
4	Jul 16	M	--					?		X	--	Released at site
5	Aug 1	F	2						93	X	--	To Missoula-to zoo So. Dakota
6	Aug 15	M	11			112[a]				X	--	Released at site
7	Aug 27	M	SA						113	25	V	Internal-to Blacktail Plateau YNP
8	Aug 27	F	SA						114	28	V	Internal-to Blacktail Plateau YNP
9	Aug 31	M	6						70	38	V	Internal-Lewis River Divide YNP
10	Sep 7	M	AD	115						75	V	To Lewis River Divide YNP
11	Sep 9	F	SA						120	28	V	Internal-to Turbid Lake YNP
12	Sep 14	F	AD		116					46	V	To Cub Creek YNP
13	Sep 14	F	1		117					42	V	To Turbid Lake YNP
14	Sep 14	F	1		118					41	V	To Lewis River Divide YNP
15	Sep 15	F	3		67					44	V	To Blacktail Plateau YNP
16	Sep 17	F	AD		50					41	V	To Turbid Lake YNP
17	Sep 18	M	5						88	X	--	Control
18	Sep 23	F	SA				119			30	V	To Lamar River YNP
19	Sep 28	M	AD					121		69	V	To Blacktail YNP
20	Sep 28	F	SA				120			26	V	To Gibbon Meadows YNP
21	Oct 2	F	SA				120			61	V	To Lewis River Divide YNP
22	Oct 4	M	SA						113	14	B	To Flat Mtn. Arm YNP
23	Oct 9	F	3				67			44	V	To Turbid Lake YNP
24	Oct 16	M	SA						113	X	--	To zoo in B.C.

NORTHWEST BORDER POPULATIONS				5 MI. No. of Blaine, MT	Sieben Ranch[b]	Teton River[c]	
1	Jun 10	M	3-5	4040			60 miles to Sec. 8,T25N,T13
2	Sep 18	F	6-8		372		80 miles to Sec. 10,T24N,R16W
3	Sep 18	M	C		343		80 miles to Sec. 10,T24N,R16W
4	Sep 25	M	1-2			392	4 miles down river
5	Sep 27	M	2-5			378	65 miles to Sec. 10,T24N,R16W

a - Individual identity. b - Sec. 31, T14N, R7W. c - Sec. 19, T25N, R5W

Table 21. Initial grizzly control actions (captures) with repeat controls of individuals in same or prior years in Interagency Yellowstone study area, 1981-1984.

	1981			1982				1983					1984				
	Bear No.	Sex/ Age	No. Controls 1981	Bear No.	Sex/ Age	No. Controls 1982	1981	Bear No.	Sex/ Age	No. Controls 1983	1982	1981	Bear No.	Sex/ Age	No. Controls 1984	1983	1982	1981
1	5	M-13	2	5	M-14	1*	2	10	F-12	1*	1		50	F-6	1			1
2	8	F-14	2	8	F-15	1*	2	15	M-12	1*			67	F-3	2	2	1	2
3	26	F-22	3*	10	F-11	1		38	F-12	1			70	M-6	1			
4	50	F-3	1	15	M-11	2		60	F-6	1*	1	1	88	M-5	1*	1	2	
5	59	F-3	1	60	F-5	1	1	67	F-2	2	1		93	M-2	1*	1	3	
6	60	F-4	1	67	F-1	1		88	M-6	1	2		112	F-11	1			
7	62	M-2	2	69	F-2	1*	2	93	F-1	1	3		113	M-SA	3*			
8	67	F-C	2	71	M-4	1	1	94	M-1	3*	4		114	F-SA	1			
9	69	F-1	2	78	M-3	1	1	95	M-1	2*	4		115	M-8	1			
10	71	M-3	1	81	M-4	3*	2	99	M-2	1			116	F-10	1			
11	73	M-2	1	88	M-5	2		100	F-C	1			117	F-1	1			
12	74	M-C	3	89	M-1	1		101	F-1	1			118	F-1	1			
13	75	F-1	1	90	M-2	2*	1	102	F-1	1			119	F-3	1			
14	76	F-1	1	93	F-C	3							120	F-SA	3			
15	77	F-8	2*	94	M-C	4							121	M-4	1			
16	78	M-2	1	95	M-C	4							No #	M-AD	1			
17	79	F-7	1										No #	M-1	1*			
18	80	M-1	1										G-19	F-AD	1			
19	81	M-3	2										G-20	F-C	1			
20	82	F-5	1										G-21	M-C	1			
21	83	F-13	2										No #	M-C	1*			
22	90	M-1	1															

* Removed from population.

in Montana are viable, that management requires controlled harvest, and that all non-hunting grizzly mortalities are not due to poaching.

Control actions involving problem grizzlies in 1983 and 1984, were similar to those in 1981 and 1982 and are expected to continue over the next few years. They are expected to occur even after private sectors have revised standards for handling garbage and refuse because of public sympathy for the bears.

In addition to a central office for recording and reporting grizzly mortalities, there should also be a central file for grizzly bear control actions and results. While incidental for some areas, the consolidated information is more readily available for management considerations and information to the public. Such information will bring to light the complexity of biological and political management of the grizzly. Even with interagency management guidelines and procedures for handling grizzly conflicts, interagency and public involvement continues to interrupt established guidelines.

Consolidation of recent and current grizzly studies does address the heritage and current status of northwest grizzly populations in Montana and the Interagency grizzly population with the fact that populations are viable and probably at maximum densities in the present occupied and secure habitat. Many obvious and several insidious encroachments have occurred in grizzly habitats by reducing capacities that are fundamental for maintaining harmonious viable grizzly populations. Present policies, political interventions and program efforts to increase populations to unknown former numbers are unrealistic until the concept and role that habitat is the factor for the grizzly.

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MONTANA

DEPARTMENT OF

FISH, WILDLIFE AND PARKS

Wildlife Laboratory
Box 5 - MSU
Bozeman, MT 59717
December 30, 1983

TO: 1983 Grizzly Bear Hunting Licensees

The Endangered Species Act of 1973 and a subsequent ruling by the U.S. Fish and Wildlife Service (July 1975 Federal Register) classified the grizzly as "threatened" in the lower 48 states. This ruling described three geographically separate grizzly habitats and their populations in Montana. Currently, hunting is allowed in only the northwest Montana population with an annual human mortality by hunting and nonhunting not to exceed 25 individuals by federal law.

Since grizzly bear hunters realize only a 1 to 2% rate of success, an unlimited issue of grizzly bear hunting licenses is possible. With a strict monitoring system, the total quota of 25, and additional regional restrictive female mortality quotas, the necessary criteria is provided to effectively manage Montana's grizzly bear populations.

Montana is the only one of 48 lower states where a grizzly bear hunting license is available. Since 1975, from 500 to 1,000 licenses have been issued each year. These licenses provide a special recreational opportunity to both see and take a grizzly bear.

During the past 9 years, the federal quota of 25 has not been exceeded. Annual known man-related mortalities have ranged from 14 to 24. Approximately 54% of those have been by legal hunting. Non-hunting mortalities have ranged from 7 to 12 bears for each year.

Our Department recognizes its responsibility to perpetuate the grizzly and to ensure its future in Montana. At the present time and under existing conditions, we consider that hunting in Northwest Montana is not jeopardizing the species. Our past success in controlling the take of grizzly with the quota system and the cooperation of hunters like yourself has contributed to this assessment.

Our records for 1983 revealed that 598 grizzly bear hunting licenses were issued to 485 residents and 113 nonresidents. A total of 15 grizzlies were killed in the northwest populations during 1983 with hunters accounting for 8. The 7 nonhunting mortalities were classified as: 2 menacing, 4 mistaken identity, and 1 road kill.

Each year there are grizzly confrontations requiring management actions. In the northwest populations from July - October 1983, a total of 8 control actions involved 7 individuals which were captured, marked, and relocated 35 to 67 air miles from capture site.

Many of the grizzly bear hunters in previous seasons did see grizzlies or grizzly sign (scats, droppings, digging, tree scratching) in many areas during the season. The 8 grizzlies taken by hunters in 1983, as well as the 17 in 1982, 11 in 1981, and 11 in 1980, were also well distributed by area and time.

Some of the information on which our Department manages grizzly bears is provided by hunters like yourself. Therefore, we are asking that you take the little time necessary to complete the enclosed questionnaire and attached map concerning your 1983 grizzly bear hunting activities. Even if you did not hunt, each reply is important and provides us with information that assists with our studies and management. Please return both pages in the enclosed postage-paid return envelope.

We appreciate your interest and concern for Montana's grizzly bears.

Sincerely,

Dale W. Witt
Acting Wildlife Administrator

Ken Greer

By: Kenneth R. Greer
Laboratory Supervisor

KG/mm

Inquiry to 1983 Grizzly Bear Hunting License Holders

Please answer all questions with a circle, or fill in as necessary.

1. Did you hunt grizzly bear during the season? *Yes or No*

2. Did you hunt grizzlies in District 150, 151 or 280 during the early season of September 15 to October 25? *Yes or No*

3. Did you hunt grizzlies during the regular season of October 25 to November 27? *Yes or No*

4. Please indicate the calendar dates you hunted in each of the following hunting districts during the grizzly season.

HD 150_____	HD 140_____	HD 441_____
HD 151_____	HD 141_____	HD 442_____
HD 280_____	HD 281_____	HD 450_____
	HD 406_____	
HD 101_____	HD 415_____	
HD 110_____	HD 422_____	HD 427_____
HD 130_____	HD 424_____	HD 428_____

5. Did you see any bears? *Yes or No*

6. Were you able to distinguish the bear(s) as a grizzly? *Yes or No*

7. How many different grizzlies did you observe?_____

8. How many singles_____, pairs_____, or more_____, at one time?

9. If you saw a grizzly, was it in the open? *Yes or No* or, on the edge of cover? *Yes or No*

10. How far away?_____

11. How long were you able to observe the grizzly(s)?_____

12. Could you have shot? *Yes or No*

13. Did you shoot? *Yes or No*

14. On the enclosed map, please mark with an X, the general location for each grizzly you observed.

15. If you did not see a grizzly, did you observe grizzly tracks? *Yes or No* Indicate location of grizzly tracks sith an 0 on the enclosed map.

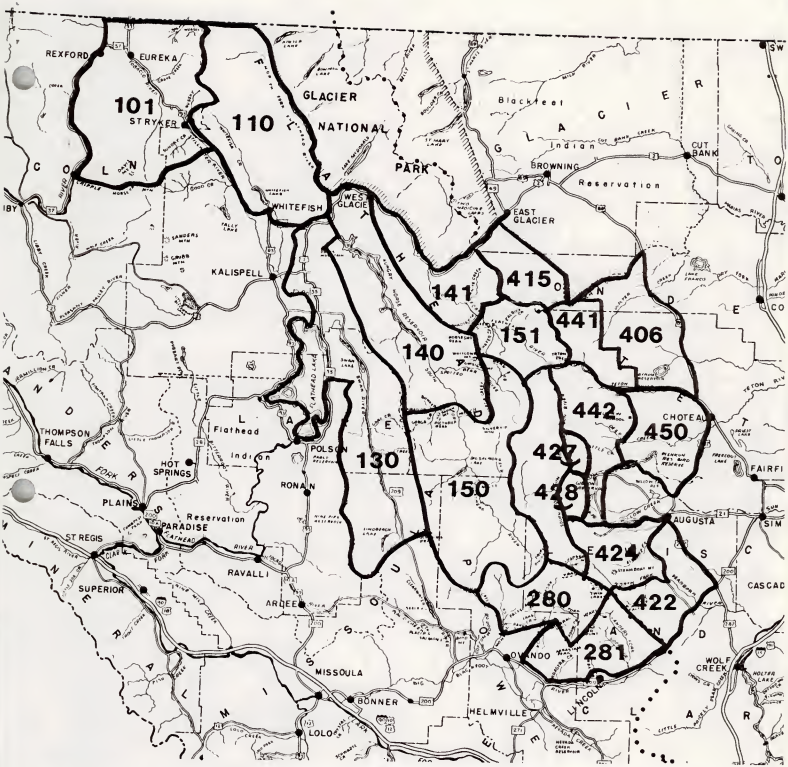
BLACK BEAR

16. Did you have a black bear license? *Yes or No*

17. Did you see any black bears? *Yes or No* Total number seen_____

18. Did you kill a black bear? *Yes or No* In which District hunted_____

19. Do you have comments on the management of grizzlies, the above questions, or the letter of information? (Please reply on reverse side of this page.)



HUNTING DISTRICTS OPEN FOR GRIZZLY BEAR IN 1983

MARK AN X WHERE YOU OBSERVED EACH GRIZZLY

MARK AN O WHERE YOU SAW GRIZZLY SIGN (TRACKS, SCATS)